# BULLETIN
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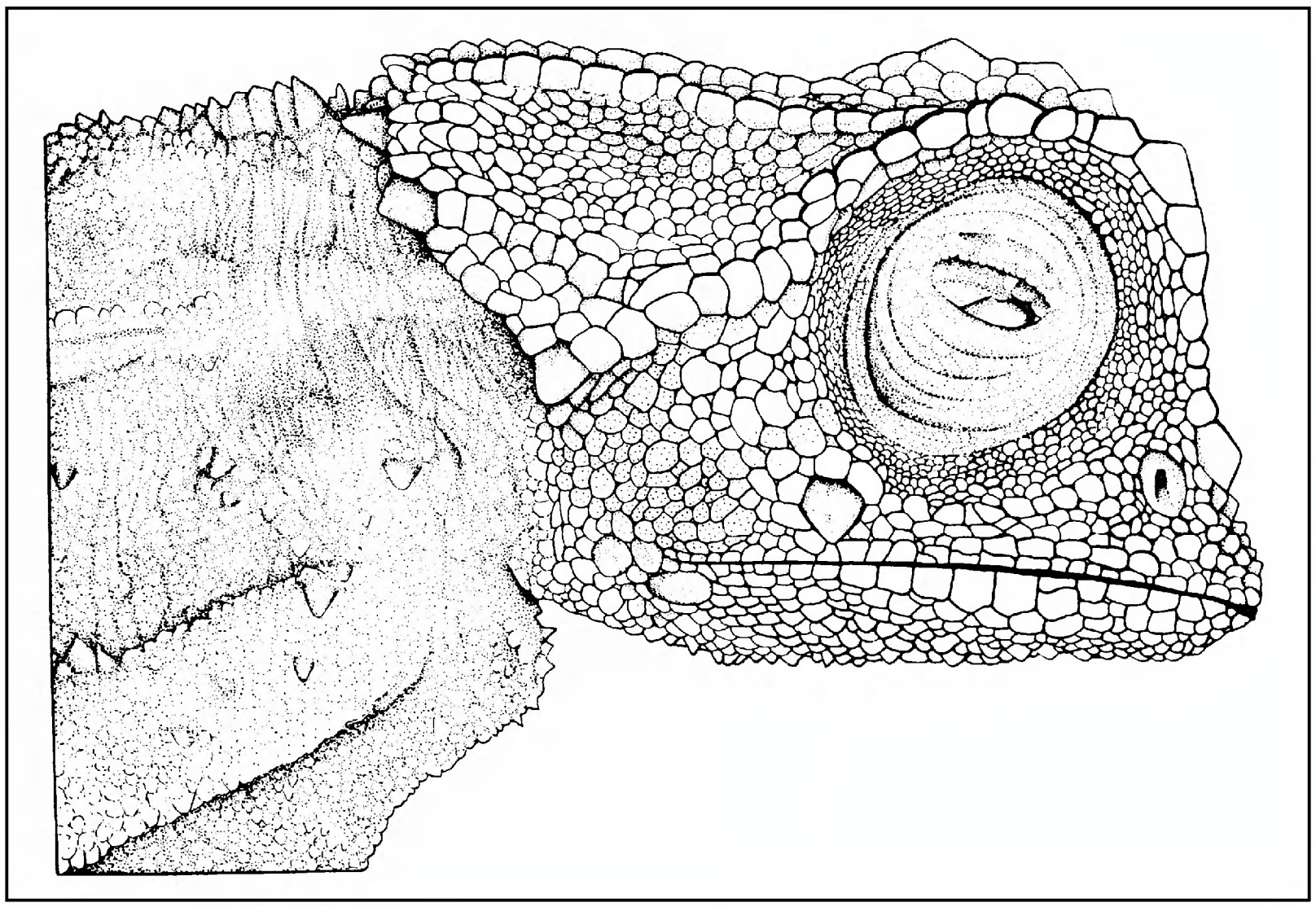

# BULLETIN OF THE CHICAGO HERPETOLOGICAL SOCIETY
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# Notes on Mexican Herpetofauna 12: Are Roads in Nuevo León, Mexico, Taking Their Toll on Snake Populations?

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**Abstract**

Mortality caused by road traffic could contribute to a decreased gene pool in amphibian and reptile populations. There have been no previous studies done on road kills of these vertebrate groups in the northeast of Mexico. In order to document this anthropogenic phenomenon, the catalogue of the preserved herpetological collection of UANL/FCB was examined to locate specimens that were observed or collected on federal and state roads in Nuevo León. During the period (1993–2007) a total of 825 specimens were collected from the state of Nuevo León. Of these, 710 were found on a road within the state (Alive on Road [AOR] = 468 and Dead on Road [DOR] = 242). Of these we could only pinpoint on the state road map 176 AOR and 126 DOR; the rest were not used in this study.

**Resumen**

La mortalidad causada por el tráfico en las carreteras puede contribuir a disminución del pool genético local y regional de las poblaciones de anfibios y reptiles. No hay estudios sobre la mortalidad en carreteras del noreste de México sobre este grupo de vertebrados. Como una manera de contribuir a la documentación de este fenómeno antropogénico, se analizo la colección herpetologica preservada de la UANL/FCB en búsqueda de ejemplares que fueron encontrados en carreteras estatales o federales en Nuevo León desde (1993-2007), con un total de 825 ejemplares colectados para el estado; de estas un total de 710 ejemplares fueron encontrados en las carreteras, categorizandose de la siguiente manera (AOR = 468 and DOR = 242) por siglas en Ingles, después de esta solamente 176 AOR (Alive on Road) y 126 DOR (Dead on Road), pudieron ser correctamente localizadas en la carreteras del estado, los ejemplares restantes fueron descartados y no examinados.

## Introduction

There is a substantial amount of literature on the effect that roads have upon vertebrate population groups, and the high mortality rates occurring with amphibians and reptiles that transit roads during their terrestrial movement while carrying out their physiological needs on a daily or seasonal basis (Langton, 1989; Ashley and Robinson, 1996; Smith and Dodd, 2003; Aresco, 2005). Also, it has been hypothesized that reptiles and amphibians are attracted to roads to elevate their body temperature on cool nights following sunny days because the road surface remains warmer than the air and surrounding landscape (e.g., Dodd et al., 1989; Rosen and Lowe, 1994). The heat stored on the road surface is released into the atmosphere at night, creating "heat islands." Animals respond to these heat islands: snakes, for example, preferentially aggregate on or near warm roads, increasing their risk of being hit by cars (Trombulak and Frissell, 1999). In the northeastern United States and southeastern Canada, for example, road mortality is associated with population declines and altered population structure of amphibians and reptiles (Fahrig et al., 1995; Marchand and Litvaitis, 2004; Steen and Gibbs, 2004; Gibbs and Shriver, 2005). Habitat fragmentation and physical barriers pose what many conservation ecologists consider the greatest obstruction to maintaining species diversity and ecological integrity (Wilcox and Murphy, 1985; Saunders and Hobbs, 1991; Forman and Alexander, 1998). In general, mortality increases with traffic volume (e.g., Rosen and Lowe, 1994; Fahring et al., 1995). Also, that reptile and amphibian species, and even sex and age classes within a species, differ in the cause of movements that result in road crossing has also been documented (Gibbs, 1998; Semlitsch, 2000; Carr and Fahrig, 2001; Andrews and Gibbons, 2005; Steen and Smith, 2006).

This anthropogenic phenomenon has not been documented in the northeast of Mexico. With increasing traffic volume and road construction (federal, state, municipal and dirt roads) throughout Nuevo León, it is without doubt a growing problem for reptiles and amphibians, especially for those federal or state roads that for kilometers may have a mid-road taffic barrier. Such roads make it even more difficult for animals to cross; here we find not just herpetofauna, but also mammals such as field rodents, coyotes, deer, opossums, ring-tails, armadillos, etc., trapped and killed. Mortality is also frequently observed in roads close to cities, where many domestic animals are found as DORs, including many terrible traffic accidents within city limits when horses are allowed to roam without any restraint.

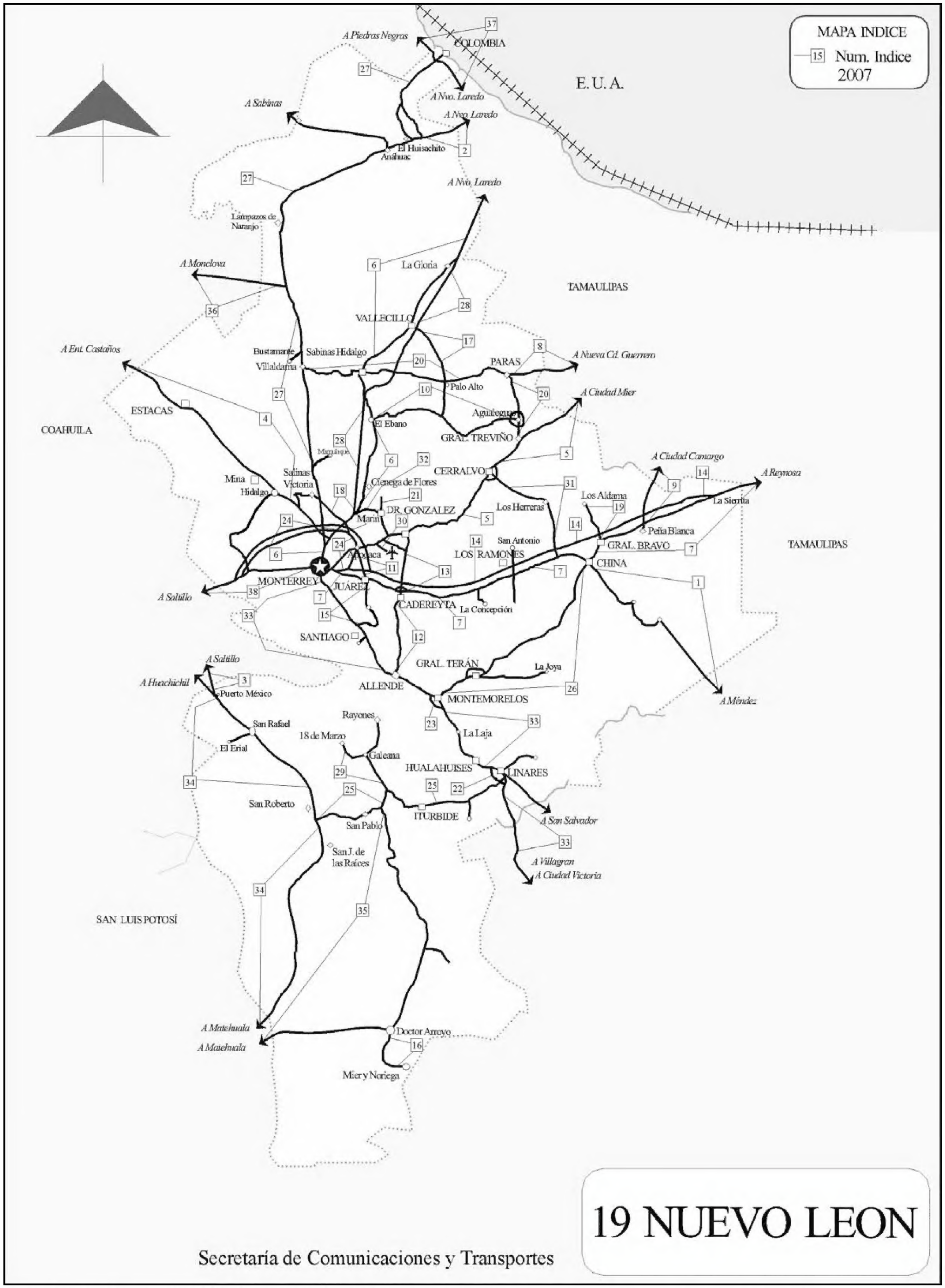


**Figure 1**. Map of Nuevo León (2007) showing federal and state roads (numbered squares correspond with the road numbers in Table 1).

## Study Area

The state of Nuevo León lies between longitudes 98°17′W and 101°07′W, and between latitudes 23°06′N and 27°50′N. It has as neighbors the U.S. state of Texas to the northeast and the Mexican states of Tamaulipas to the east, Coahuila to the northwest and west, and Zacatecas and San Luis Potosí to the southwest. The state is shaped like an irregular rhombus with a surface area of 64,081.94 km$^2$. Its maximum north-south axis exceeds 500 km. The majority of the state is found within the northern temperate zone, but a small portion of its southern area lies south of the Tropic of Cancer (Contreras-Balderas et al., 1995). Figure 1 shows the various federal and state roads throughout the state of Nuevo León and Table 1 gives a corresponding list of the roads.

**Table 1**. Road numbers and corresponding Highway Nº in Guía Roji for the state of Nuevo León, Mexico. The figures in the column headed Traffic represent the average number of vehicles per day traveling each road during the year 2007.

| Road number and description | Guía Roji Highway Nº | Traffic |
|---|---|---|
| 1. China – Méndez | State Nº 4 | 2056 |
| 2. Ent. Huisachito – Nuevo Laredo | State Nº 1 | 9220 |
| 3. Aut. Puerto México – Ojo Caliente | Fed. Nº 57 | 63513 |
| 4. Monterrey – Castaños | Fed. Nº 53 | 69931 |
| 5. Monterrey – Mier | Fed. Nº 54 | 121997 |
| 6. Monterrey – Nuevo Laredo (free) | Fed. Nº 85 | 238603 |
| 7. Monterrey – Reynosa (free) | Fed. Nº 40 | 105584 |
| 8. Paras – Nueva Ciudad Guerrero | Fed. Nº 30 | 1398 |
| 9. Peña Blanca – Ciudad Camargo | — | 7552 |
| 10. Agualeguas – El Ébano | State Nº 23 | 2393 |
| 11. Apodaca – Villa Juárez | — | 28281 |
| 12. Cadereyta – Allende | Fed. Nº 9 | 2507 |
| 13. Cadereyta – Doctor González | — | 2024 |
| 14. Cadereyta – La Sierrita | Fed. Nº 40 | No data |
| 15. Cd. Benito Juárez – Villa de Santiago | — | 13451 |
| 16. Doctor Arroyo – Mier y Noriega | State Nº 88 | 1174 |
| 17. Palo Alto – Vallecillos | — | 2381 |
| 18. Santa Rosa – Salinas Victoria | — | 18260 |
| 19. Gral. Bravo – Los Aldama | — | 1781 |
| 20. Gral. Treviño – Villa Aldama | State Nº 3 | 10608 |
| 21. Hacienda Guadalupe – Higueras | State Nº 6 | 3709 |
| 22. Libramiento de Linares | Fed. Nº 85 | 18370 |
| 23. Libramiento de Montemorelos | Fed. Nº 85 | 7593 |
| 24. Libramiento Noroeste de Monterrey | Fed. Nº 40 | 45083 |
| 25. Linares – Ent. San Roberto | Fed. Nº 57 | 8127 |
| 26. Montemorelos – China | Fed. Nº 35 | 9456 |
| 27. Monterrey – Colombia | State Nº 1 | 48232 |
| 28. Monterrey – Nuevo Laredo (tollway) | Fed. Nº 85 | 7438 |
| 29. Ramal a 18 de Marzo | State Nº 32 | 2124 |
| 30. Ramal a Aeroporto Mariano Escobedo | Fed. Nº 54 | 20894 |
| 31. Ramal – Cerralvo | State Nº 13 | 2404 |
| 32. Ramal – Marín | Fed. Nº 54 | 3560 |
| 33. Ciudad Victoria – Monterrey | Fed. Nº 85 | 204859 |
| 34. Matehuala – Ent. Puerto México | Fed. Nº 57 | 71531 |
| 35. Matehuala – La Poza | State Nº 61 | 6068 |
| 36. Monclova – Estación Candela | State Nº 30 | 3923 |
| 37. Piedras Negras – Nuevo Laredo | Fed. Nº 2 | 25741 |
| 38. Saltillo – Monterrey | Fed. Nº 40 | 234311 |
| 39. Dirt roads within the state | — | No data |

The state of Nuevo León connects directly to all important destinations of Mexico via federal roads, and to all its 51 municipalities via state roads. The most important roads are shown in Figure 1.

The geographic location of the state is a transition zone between Nearctic and Neotropical biogeographic divisions, giving the state a variety of ecosystems that have an enormous influences on distributional patterns of vertebrate groups (Anonymous, 2000). In the state of Nuevo León we can find some of the following vegetation types: *matorral desértico rosetófilo* [desert scrubland with succulents], *matorral submontano* [submontane scrub], pine and oak forests (Anonymous, 1994).

Federally protected areas account for 4.3% of the state's territory. These would be the following national parks: Cumbres in Allende, Monterrey, Santa Catarina, San Pedro Garza García, and Santiago (177,395 ha); El Sabinal in Cerralvo (8 ha); and Monumento Natural Cerro de la Silla in Guadalupe, Juarez and Monterrey (6,039 ha) (Arriaga et al., 2000). There are also 23 state protected areas with 57,387 ha (Anonymous, 2000), and a few in review. We presume that these protected ares help lower the pressure on state wildlife populations, but we consider this to be insufficient, due to the fact that the state has an extremely large population, growing both from within and because of people coming in from neighboring states. Plus, these protected areas have many dirt roads crossing through them, and here we can also occasionally find DORs.

## Materials and Methods

Specimens used here have been deposited in the preserved collection of the FCB/UANL. They were identified and electronically catalogued. We included the following information in the database: scientific classification (family, genus, species and subspecies), catalogue number, locality, municipality, state, coordinates, date collected, field number, collector(s), and specimen characteristics such as weight, length, sex and physical condition of the animal such as AOR or DOR. The electronic catalogue is an invaluable tool when it comes to detailing information on all specimens observed or collected. From here we proceeded to analyze our database looking for specimens that had been found on roads in conditions that we categorized as AOR or DOR.

Many of the road-collected specimens from throughout the state are due to the fact that since 1993 we have been involved in herpetological studies in various areas within the state, mainly mountainous areas. This has given us access to a good number of specimens as we commuted back and forth from these study sites. Unfortunately we have not had the opportunity to focus our attention on a particular federal or state road at a given time of year to determine the intensity of this phenomenon.

After locating the specimens that fell into the AOR and DOR categories, we extracted the locality information from the data base and used a map which is a combination of maps issued by

**Table 2**. Numbers of DOR specimens from various states of Mexico and the U.S. deposited in the FCB/UANL collection.

| State | # of DORs |
|---|---|
| Chiapas | 10 |
| Chihuahua | 2 |
| Coahuila | 21 |
| Durango | 4 |
| Edo. de México | 2 |
| Guerrero | 2 |
| Jalisco | 6 |
| Louisiana | 2 |
| Morelos | 2 |
| Nuevo León | 242 |
| Oaxaca | 7 |
| San Luís Potosí | 2 |
| Sinaloa | 3 |
| Sonora | 27 |
| Tabasco | 1 |
| Tamaulipas | 609 |
| Texas | 1 |
| Veracruz | 4 |
| Yucatán | 2 |
| Zacatecas | 2 |

the Secretaria de Comunicación y Transportes de México [SCT] (2007) and Guía Roji (2002 and 2007–2008) ( see Figure 1 and Table 1). We emphasize that the SCT map used here is constantly changing its nomenclature from year to year: roads may change location or length, and may join with or be replaced by other roads. So pinpointing which road a specimen corresponded to, if it was a federal or state highway, was with the use of the 2007 map (Anonymous, 2007). From this we constructed a group of tables with number of the road, observed/collected species, numbers or frequency and whether AOR or DOR..

## Results

The Universidad Autónoma de Nuevo León, Facultad de Ciencias Biológicas under its [UANL/FCB] has in its preserved collection a total of 7990 specimens corresponding to Caudata, Anura, Testudines and Serpentes. The collection was established in 1966, and continued growing with specimens mainly from Nuevo León, Tamaulipas and Coahuila. It stopped growth sometime in 1979. After 1993, with a reorganization, it initiated a new phase of continued growth, with help from faculty, students and projects.

Of the 7990 preserved specimens in the collection, 1794 corresponded to snakes,with 825 being from Nuevo León. Of the 825, a total of 710 were found on a road within the state (AOR = 468 and DOR = 242). And of these we could only pinpoint on the state road map 176 AOR and 126 DOR; the others were not used in this analysis.

Table 2 indicates the species and number of DORs collected per federal state (and two U.S. states as well) between 1993 and 2007. Tables 3 and 4 show the species and numbers of DORs and AORs observed/collected in the state of Nuevo León during this period.

## Discussion

The most DORs were found on the Matehuala–La Poza road (State Road # 61), a total of 20, accounting for 15.9% of the total. Roads with similar frequencies were Ent. Huisachito–Nuevo Laredo (State Road # 1) with 11.1%, Monterrey–-Colombia (also part of State Road # 1) with 11.1% and dirt roads with 9.5%. The roads with the highest frequencies of live specimens were: Ciudad Victoria–Monterrey (Federal Road # 85) with 21.6%, Matehuala–La Poza (State Road # 61) with 10.2%, Monterrey–Colombia (State Road # 1) with 9.1%, Ent. Huisachito–Nuevo Laredo (also part of State Road # 1) with 8.5% and dirt roads with 6.8%.

Our roads present a gray–dark coloration; their exposure to the intense sun allows them to become excellent surfaces for snakes that are looking for a warm spot. But this has a negative effect on snake populations putting them in risk of being hit by cars more frequently as documented by Trombulak and Frissell (1999). Immobilization is often coupled with the snake flattening its body against the asphalt, which lends to an appearance of basking. Thermoregulation likely does occur in some situations (e.g., Bernardino and Dalrymple, 1992) but probably under low-traffic conditions or in desert locations where animals are accustomed to open landscapes.

Another factor known to affect herpetological activities is ambient temperature, but this changes with the seasons. In our region the months with the hottest temperatures and lowest relative humidities are May, June, July and August. Of these, May is sometimes considered the hottest; temperatures cool down only as the rainy season appears. Even though we didn't graph AORs and DORs by monthly frequency, in the hottest months herpetological activities seem to come to a halt. But moving across roads will increase as the rains appear and the temperature decreases (Lazcano et al., 2007).

In our data the species found most often was *Crotalus atrox* with 26 specimens (20.6%) of the total of DORs. Other species with high frequencies of DORs were *Rhinocheilus lecontei tessellatus* with 12 specimens (9.5%) and *Lampropeltis triangulum annulata* with 11 specimens (8.7%). The species most seen alive was *Crotalus atrox* with 27 specimens (15.3%) of the total of the AORs observed. This species in particular is distributed throughout the state from the northernmost municipality of Anahuac to the southernmost municipality Mier y Noriega. Other species frequently seen alive were *Lampropeltis triangulum annulata*, also with 27 specimens (15.3%), *Rhinocheilus lecontei tessellatus* with 14 specimens (8.0%), and *Elaphe* (=*Pantherophis*) *emoryi* with 13 individuals (7.4%).

Table 1 shows the average traffic volume per day for the year 2007 transiting various roads in Nuevo León. The roads with high traffic volume would be the most dangerous for any vertebrate or invertebrate to cross. These roads are where species must suffer high rates of mortality and are subject to fragmentation, and where insufficient numbers of individuals may successfully cross to maintain necessary population dynamics as documented by Andrews and Gibbons (2005). Furthermore; snakes are a maligned group of animals and are subject to the additional threat of intentional killing of individual snakes that

**Table 3**. List of taxa found DOR and the corresponding number of individuals found on each of 39 roads in the period (1993–2007). Scientific names based on Liner (2007).

| Taxon | Road numbers (see Table 1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| *Arizona elegans arenicola* | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| *Crotalus atrox* | | 4 | | | | 2 | 1 | | | 2 | | | | 1 | | | | | | 1 | 2 | 2 | 1 | | | | 4 | 2 | | | | | 2 | | 1 | | | 1 | |
| *Crotalus lepidus* (*lepidus* and *morulus*) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | 1 |
| *Crotalus molossus* (*molossus* and *nigrescens*) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| *Crotalus pricei miquihuanus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| *Crotalus scutulatus scutulatus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | | | |
| *Drymarchon melanurus erebennus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Drymobius margaritiferus margaritiferus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Heterodon kennerlyi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hypsiglena torquata jani* | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | 4 | | | | | | | | 1 | | | | |
| *Lampropeltis getula splendida* | | | | | | | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | |
| *Lampropeltis mexicana* (*mexicana* and *thayeri*) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | | | |
| *Lampropeltis triangulum annulata* | | 1 | | | | 1 | 1 | | | | | | | 1 | | | | | | | | 1 | 1 | 1 | | | 1 | 1 | | | | | 1 | | | | | 1 | |
| *Leptodeira septentrionalis septentrionalis* | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Leptophis mexicanus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Leptotyphlops myopicus myopicus* | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | |
| *Coluberconstrictor oaxaca* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Coluber* (=*Masticophis*) *flagellum testaceus* | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | | | | |
| *Coluber* (=*Masticophis*) *schotti ruthveni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| *Micrurus tener tener* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Nerodia rhombifer* (*blanchardi* and *rhombifer*) | | | | | | 1 | | | | | | | | | | | | | | | | 1 | 1 | | | | 1 | | | | | | 1 | | | | | | |
| *Opheodrys aestivus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Elaphe* (=*Pantherophis*) *bairdi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Elaphe* (=*Pantherophis*) *emoryi* | | | | | | 1 | 1 | | | | | | | 1 | | | | | | 1 | | 1 | 1 | 1 | | | 1 | | | | | | 1 | | 3 | | | 1 | |
| *Pituophis catenifer sayi* | | | | | | 1 | | | | 1 | | | | | | | | | | | | 1 | 1 | | | | 1 | | | | | | 1 | | | | | | |
| *Pituophis deppei* (*jani* and *deppei*) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | | | |
| *Ramphotyphlops braminus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Rhadinaea montana* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| *Rhinocheilus lecontei tessellatus* | | 3 | | | 1 | | | | | | | | | | | | | | | | | | | | | | 3 | | | 1 | | 1 | | | 3 | | | | |
| *Salvadora grahamiae lineata* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| *Senticolis triaspis intermedia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sonora semiannulata semiannulata* | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Storeria dekayi texana* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 |
| *Storeria hidalgoenesis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Tantilla rubra* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| *Thamnophis cyrtopsis cyrtopsis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| *Thamnophis exsul* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| *Thamnophis marcianus marcianus* | | | | | | | | | | 2 | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | |
| *Thamnophis proximus diabolicus* | | | | | | 1 | | | | | | | | | | | | | | | | 1 | 1 | | | | 1 | | | | | | 1 | | | | | | |
| *Trimorphodon tau tau* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Tropidodipsas sartorii sartorii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

attempt to cross roads. This has been documented by Langley et al. (1989), even to the extent where people feel happy about running over a snake.

We understand that DORs are catastrophic events to any vertebrate population, inflicting in many cases a loss to the genetic pool. Nevertheless, if collected and documented, DORs can be an excellent source of information such as distribution of the species, sizes, sex movements/activity and diet contents. This was the case with Lazcano et al. (2004), where they report on a DOR specimen of *Crotalus lepidus* found on a mountain road from Santiago to Laguna de Sanchez in the San Isidro Canyon. This snake was found completely flattened and matching the color of the road. Interestingly, it had in its mouth a *Sceloporus minor,* and this was the first time anyone reported this species of lizard as a food item for *C. lepidus.* This is just on example of what we can obtain from DOR specimens, which if not collected will just rot or consumed by scavengers.

In our analysis dirt roads are put together as a whole for the state. These are mainly those in mountainous areas. Our mountainous dirt roads, especially those in the area of Sierra Peña Nevada, have a very low volume of traffic. On occasion we wouldn't see another vehicle at all. But these roads still produced our rarest DORs: *Crotalus lepidus morulus* (1) and *Crotalus pricei miquihuanus* (1), very unfortunate creatures. Especially when their main activity here is restricted to the agave areas.

## Conclusion

This article documents only an insignificant portion of what the DOR problem is for vertebrates in northeastern Mexico. We cannot halt human progress; roads constitute the basic backbone infrastructure for any nation that needs to move its goods within the country or export them. We have to look for more friendly transportation routes, that damage fauna and flora as little as possible, but it doesn't look like a solution is close. We're building wider roads, that will support a much more demanding transport system, making them impossible to cross. We think that fragmentation of populations by roads will continue and we

**Table 4**. List of taxa found AOR and the corresponding number of individuals found on each of 39 roads in the period (1993–2007). Scientific names based on Liner (2007).

| Taxon | Road numbers (see Table 1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | | | | | | | | |
| *Arizona elegans arenicola* | | | | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Crotalus atrox* | | 4 | | | | 2 | 1 | | | 2 | | | | 1 | | | | | | 1 | | 2 | 2 | 1 | | 1 | 4 | 2 | | | | | 2 | | 1 | | | 1 | | | | | | | | |
| *Crotalus lepidus* (*lepidus* and *morulus*) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | 1 | | | | 1 | | | | | | | | |
| *Crotalus molossus* (*molossus* and *nigrescens*) | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| *Crotalus pricei miquihuanus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| *Crotalus scutulatus scutulatus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | |
| *Drymarchon melanurus erebennus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| *Drymobius margaritiferus margaritiferus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Heterodon kennerlyi* | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hypsiglena torquata jani* | | 4 | | | | | | | | | | | | | 1 | | | | | | | | | | | | 4 | | | | | | | | 1 | | | | | | | | | | | | |
| *Lampropeltis getula splendida* | | | | | | | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | | | | | | | | |
| *Lampropeltis mexicana* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | |
| *Lampropeltis triangulum annulata* | | 1 | | | | 1 | 1 | | | | | 1 | | 1 | | | | | | | | 1 | 1 | 1 | | | 1 | 1 | | | | | 1 | | | | | | 1 | | | | | | | | |
| *Leptodeira septentrionalis septentrionalis* | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 | | | | | | | | | | | | | | |
| *Leptophis mexicanus* | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| *Leptotyphlops myopicus myopicus* | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| *Coluber constrictor oaxaca* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | |
| *Coluber* (=*Masticophis*) *flagellum testaceus* | | 1 | | | | | | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | | | | | |
| *Coluber* (=*Masticophis*) *schotti ruthveni* | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | |
| *Micrurus tener tener* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| *Nerodia rhombifer* (*blanchardi* and *rhombifer*) | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| *Opheodrys aestivus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Elaphe* (=*Pantherophis*) *bairdi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8 | | | | | | | | | | | | | | |
| *Elaphe* (=*Pantherophis*) *emoryi* | | | | | | 1 | 1 | | | | | | | 1 | | | | | | 1 | | 2 | 1 | 1 | | | | 1 | | | | | 1 | | | 2 | | | 1 | | | | | | | | |
| *Pituophis catenifer sayi* | | | | | | 1 | | | | 1 | | | | | | | | | | | | 1 | 1 | | | | | 1 | | | | | 1 | | | | | | | | | | | | | | |
| *Pituophis deppei* (*jani* and *deppei*) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 | | | | | | | | | | | | |
| *Ramphotyphlops braminus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Rhadinaea montana* | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | 4 | | | | | | | | | | | | | | |
| *Rhinocheilus lecontei tessellatus* | | 3 | | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | 3 | | | 1 | | 1 | | | 3 | | | | | | | | | | | | |
| *Salvadora grahamiae lineata* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 3 | | | | | | | | | | | | | |
| *Senticolis triaspis intermedia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sonora semiannulata semiannulata* | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| *Storeria hidalgoensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| *Tantilla rubra* | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | |
| *Thamnophis cyrtopsis cyrtopsis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| *Thamnophis exsul* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Thamnophis marcianus marcianus* | | | | | | | | | | 2 | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Thamnophis proximus diabolicus* | | | | | | 1 | | | | | | | | | | | | | | | | 1 | 1 | | | | 1 | | | | | | 1 | | | | | | | | | | | | | | |
| *Trimorphodon tau tau* | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | 1 | | | | | | | | | | | | | | |
| *Tropidodipsas sartorii sartorii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | |

need to pay attention to the consequences of this. We hope that article will inspire more Mexican herpetologists to document this phenomenon throughout the country, perhaps in smaller sections.

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## Literature Cited

Andrews, K. M., and J. W. Gibbons. 2005. How do highways influence snake movement? Behavioral responses to roads and vehicles. Copeia 2005(4):772-782.

Anonymous. 1994. Propuesta para la redelimitación del Parque Nacional Cumbres de Monterrey. UANL, SEDUOP, ITESM. p. 154.

Anonymous. 2000. Decretos de áreas naturales del estado de Nuevo León, México. Secretaria de Ecología y Recursos Naturales. Periódico Oficial 2000..

Anonymous. 2007. INEGI. http://dgst.sct.gob.mx/fileadmin/viales_2007/19_NL.pdf

Aresco, M. J. 2005. The effect of sex-specific terrestrial movements and roads on the sex ratio of freshwater turtles. Biological Conservation 123:37-44.

Arriaga, L., J. M. Espinosa, C. Aguilar, E. Martínez, L. Gómez and E. Loa. 2000. Regiones Terrestres Prioritarias de México. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, México. Pp.361-362.

Ashley, E. P., and J. T. Robinson. 1996. Road mortality of amphibians, reptiles and other wildlife on the Long Point Causeway, Lake Erie, Ontario. Canadian Field-Naturalist 110:403-412.

Bernardino, F. S., Jr., and G. H. Dalrymple. 1992. Seasonal activity and road mortality of the snakes of the Pa-hay-okee wetlands of Everglades National Park, USA. Biological Conservation 61:71-75.

Carr, L. W., and L. Fahrig. 2001. Effect of road traffic on two amphibian species of differing vagility. Conservation Biology 15(4): 1071-1078.

Contreras-Balderas, S., F. González, D. Lazcano and A. J. Contreras-Balderas. 1995. Listado preliminar de la fauna silvestre del estado de Nuevo León, México. Consejo Consultivo para la Preservación y Fomento de la Flora y Fauna Silvestre de Nuevo León. Pp. 55-70.

Dodd, C. K., Jr., K. M. Enge and J. N. Stuart. 1989. Reptiles on highways in north-central Alabama, USA. J. Herpetology 23(2):197-200.

Fahrig, L., J. H. Pedlar, S. E. Pope, P. D. Taylor and J. F. Wegner. 1995. Effect of road traffic on amphibian density. Biological Conservation 73:177-182.

Forman, R. T. T., and L. E. Alexander. 1998. Roads and their major ecological effects. Annual Review of Ecology and Systematics 29: 207-231.

Gibbs, J. P. 1998. Amphibian movements in response to forest edges, roads, and streambeds in southern New England. Journal of Wildlife Management 62(2):584-589.

Gibbs, J. P., and W. G. Shriver. 2005. Can road mortality limit populations of pool-breeding amphibians? Wetlands Ecology and Conservation 13:281-289.

Langley, W. M., H. W. Lipps and J. F. Theis. 1989. Responses of Kansas motorists to snake models on a rural highway. Transactions of the Kansas Academy of Science 92(1-2):43-48.

Langton, T. E. S. 1989. Amphibians and roads: Proceedings of the toad tunnel conference. Bedfordshire,United Kingdom: ACO Polymer Products.

Lazcano, D., J. Banda Leal, G. Castañeda G., C. García de la Peña and R. W. Bryson. 2004. *Crotalus lepidus* (Rock Rattlesnake). Diet. Herpetological Review 35(1):62-63.

Lazcano D., F. Mendoza Quijano, A. Kardon, C. Garcia de la Peña and G. Castañeda. 2007. *Crotalus aquilus* (Queretaran Dusky Rattlesnake). Mortality. Herpetological Review 38(2):204-205.

Liner, E. A. 2007. A checklist of the amphibians and reptiles of Mexico. Occasional Papers of the Museum of Natural Science, Louisiana State University 80:1-60.

Marchand, M. N., and J. A. Litvaitis. 2004. Effects of habitat features and landscape composition on the population structure of a common aquatic turtle in a region undergoing rapid development. Conservation Biology 18(3):758-767.

Rosen, P. C., and C. H. Lowe. 1994. Highway mortality of snakes in the Sonoran Desert of southern Arizona. Biological Conservation 68(2):143-148.

Saunders, D. A., and R. J. Hobbs. 1991. The role of corridors in conservation: What do we know and where do we go? Pp. 421-427. *In*: D. A. Saunders and R. J. Hobbs, editors, Nature conservation 2: The role of corridors. Chipping Norton, NSW, Australia: Surrey Beatty and Sons.

Semlitsch, R. D. 2000. Principles for management of aquatic-breeding amphibians. Journal of Wildlife Management 64(3):615-631.

Smith L. L., and C. K. Dodd, Jr. 2003. Wildlife mortality on U.S. Highway 441 across Paynes Prairie, Alachua County, Florida. Florida Scientist 66(2):128-140.

Steen, D. A., and J. P. Gibbs. 2004. Effects of roads on the structure of freshwater turtle populations. Conservation Biology 18(4): 1143-1148.

Steen, D. A., and L. L. Smith. 2006. Road surveys for turtles: Consideration of possible sampling biases. Herpetological Conservation and Biology 1:9-15.

Trombulak S. C., and C. A. Frissell. 1999. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14 (1):18-30.

Wilcox, B. A., and D. D. Murphy. 1985. Conservation strategy: The effects of fragmentation on extinction. American Naturalist 125: 879-887.

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# Notes on Reproduction of *Imantodes cenchoa, Imantodes gemmistratus* and *Imantodes inornatus* (Serpentes: Colubridae) from Costa Rica

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**Abstract**

Gonadal material from three species of *Imantodes, I. cenchoa, I. gemmistratus* and *I. ornatus* from Costa Rica were histologically examined. The presence of males undergoing spermiogenesis during widely separated months of the year plus reproductively active females of *I. gemmistratus* from February and June to August suggests prolonged periods of reproduction. These species of *Imantodes* appear to exhibit extended reproduction as do other snakes from Costa Rica.

Snakes of the genus *Imantodes* occur in much of the lowlands and premontane slopes from Sonora and southern Tamaulipas, Mexico, south to northwestern Ecuador, Bolivia, Paraguay and extreme northeastern Argentina (Savage, 2002). The purpose of this note is to add knowledge on the reproductive biology from a histological examination of gonads of three species of *Imantodes* from Costa Rica: the blunthead tree snake, *Imantodes cenchoa*; Central American tree snake, *I. gemmistratus*; and western tree snake, *I. inornatus.* The first histological information on the testicular cycles and mimimum sizes for reproductive activity are presented.

Snakes were collected 1959–1985. The left testis was removed from males and the left ovary was removed from females. Counts were made of enlarged ovarian follicles (> 8 mm) or oviductal eggs. Tissues were embedded in paraffin and sectioned at 5 µm. Slides were stained with Harris' hematoxylin followed by eosion counterstain (Presnell and Schreibman, 1979). Histological slides were examined to determine the stages of the testicular cycle or for the presence of yolk deposition. Histology slides are deposited in LACM. An unpaired *t*-test was used to compare body sizes of male and female samples (Instat, vers 3.0b, Graphpad Software, San Diego, CA).

Eighteen adult *I. cenchoa* (9 males, mean snout–vent length [SVL] = 717.7 mm ± 112.4 SD, range = 503–841 mm; 8 females, mean SVL = 735.8 mm ± 74.3 SD, range = 623–843 mm and 1 juvenile, SVL = 255 mm); fourteen adult *I. gemmistratus* (5 males, mean SVL = 571.6 mm ± 49.1 SD, range = 498–619 mm; 7 females, mean SVL = 615.7 mm ± 110.5 SD, range = 447–805 mm and two juveniles, mean SVL = 239.5 mm ± 10.6 SD, range = 232–247 mm); nine adult *I. inornatus* (7 males, mean SVL = 593.1 mm ± 44.7 SD, range = 528–657 mm; 1 female, SVL = 615 mm and one juvenile, SVL = 259 mm from Costa Rica were examined from the herpetology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, CA. They are listed by Costa Rican province.

*Imantodes cenchoa*: Guanacaste: LACM 150797, 150798, 151344, Heredia: LACM 150794, Puntarenas: LACM 150790-150792, 151328, 151332, 151334- 151339, 151341, 151343, San José: LACM 150793; *Immantodes gemmistratus*: Alajuela: LACM 150771, Cartago: LACM 150769, 150772, Guanacaste: 150773, 150778, 150780, 150785, 150787, Heredia; LACM 150779, Limón: LACM 150766, San José: LACM 150767, 150768, 150770, Puntarenas: LACM 150781; *Imantodes inornatus*: Heredia: LACM 150754, 150755, 150759, 150761, Limón: 150758, Puntarenas: LACM 114141, 114142, 150760, 150765.

*Imantodes cenchoa*: Males undergoing spermiogenesis were collected from the following months: February ($n$ = 2), June ($n$ = 2), July ($n$ = 3), August ($n$ = 2). The smallest reproductively active male (spermiogenesis in progress) measured 503 mm (LACM 150797) and was collected in June. Mean clutch size for 5 gravid females (oviductal eggs or enlarged ovarian follicles > 8 mm) was 3.0 ± 0.71 SD, range = 2–4. Monthly distribution of stages in the ovarian cycle are in Table 1. Reproductively active females were found in July to September. The smallest reproductively active female (3 enlarged follicles > 8 mm) measured 680 mm SVL and was collected in August. One juvenile *I. cenchoa* was collected in October (SVL = 255 mm, LACM 150798).

*Imantodes gemmistratus*: Males undergoing spermiogenesis were collected from the following months: March ($n$ = 1), October ($n$ = 1), November ($n$ = 2), December ($n$ = 1). The smallest reproductively active male (spermiogenesis in progress) measured 498 mm SVL (LACM 150779) and was collected in November. Monthly distribution of stages in the ovarian cycle are in Table 2. Reproductively active females were found in February, June to August. Mean clutch size for 4 gravid females (oviductal eggs or enlarged ovarian follicles > 8 mm) was 3.0 ± 1.4 SD, range = 2–5. The smallest reproductively active female measured 591 mm SVL (LACM 150780) and was collected in July. Two juvenile snakes were collected in January (SVL = 232 mm, LACM 150772) and February (SVL = 247 mm, LACM 150787).

*Imantodes inornatus*: Males undergoing spermiogenesis were

**Table 1**. Monthly stages in the ovarian cycle of eight *Imantodes cenchoa* from Costa Rica.

| Month | n | Quiescent | Enlarged follicles > 8 mm | Oviductal eggs |
|---|---|---|---|---|
| April | 1 | 1 | 0 | 0 |
| June | 1 | 1 | 0 | 0 |
| July | 2 | 0 | 1 | 1 |
| August | 3 | 0 | 2 | 1 |
| September | 1 | 0 | 0 | 1 |

**Table 2**. Monthly stages in the ovarian cycle of seven *Imantodes gemmistratus* from Costa Rica.

| Month | n | Quiescent | Early yolk deposition | Enlarged follicles > 8 mm | Oviductal eggs |
|---|---|---|---|---|---|
| January | 1 | 1 | 0 | 0 | 0 |
| February | 2 | 0 | 0 | 2 | 0 |
| June | 1 | 0 | 0 | 1 | 0 |
| July | 1 | 0 | 0 | 1 | 0 |
| August | 1 | 0 | 1 | 0 | 0 |
| September | 1 | 1 | 0 | 0 | 0 |

collected from the following months: June ($n$ = 2), July ($n$ = 1), August ($n$ = 3), December ($n$ = 1). The smallest reproductively active male (spermiogenesis in progress) measured 528 mm SVL (LACM 150754) and was collected in June. The single female examined (LACM 150760) measured 615 mm SVL and contained oviductal eggs. They were damaged so a reliable clutch size could not be determined. One juvenile snake was collected in April (SVL = 259 mm, LACM 150765).

Extended reproductive cycles are common in snakes from Costa Rica (Goldberg, 2008) and have been reported for *I. cenchoa* from Mexico, Guatemala and Panama with the suggestion it may be continuous in Ecuador and Peru (Duellman, 1978; Zug et al., 1979; Fitch, 1985). The following clutch sizes for *I. cenchoa* are in the literature: two oviductal eggs from Iquitos, Peru (Fitch, 1970); clutch sizes up to eight eggs (Solorzáno, 2004); gravid females from late April to mid June in Guatemala with clutches of 1–3 eggs (Lee, 2000). My finding of *I. cenchoa* males undergoing spermiogenesis in February and August suggests an extended period of reproduction in Costa Rica.

The following clutch sizes for *I. gemmistratus* are in the literature: up to six eggs (Solorzáno, 2004); females from Panama with two eggs from May and September and one from Costa Rica with six eggs (Myers, 1982), and a typical clutch size of two eggs (Lee, 2000). Males undergoing spermiogenesis were from widely separated months spanning March to December; females exhibiting reproductive activity were from February and June to August indicating an extended period of reproduction.

The following clutch sizes for *I. inornatus* are in the literature: a female from Panama that contained four eggs (Myers, 1982); a female from Heredia Province, Costa Rica deposited a clutch of three eggs (Guyer and Donnelly, 2005); clutches of two to six eggs from April, July and August (Solórzano, 2004). My finding of males undergoing spermiogenesis from widely separated months suggests an extended period of reproduction.

Examination of reproduction in other species of snakes from Costa Rica is needed before the diversity in the timing of reproductive cycles exhibited by this snake fauna can be ascertained.

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## Literature Cited

Duellman, W. E. 1978. The biology of an equatorial herpetofauna in Amazonian Ecuador. University of Kansas Museum of Natural History, Miscellaneous Publication No. 65: 1-352.

Fitch, H. S. 1970. Reproductive cycles in lizards and snakes. The University of Kansas Museum of Natural History, Miscellaneous Publications No. 52:1-247.

————. 1985. Variation in clutch and litter size in new world reptiles. University of Kansas Museum of Natural History. Miscellaneous Publication No. 76:1-76.

Goldberg, S. R. 2008. Note on reproduction of the northern cat-eyed snake, *Leptodeira septentrionalis* (Serpentes: Colubridae) from Costa Rica. Bull. Chicago Herp. Soc. 43:175-176.

Guyer, C., and M. A. Donnelly. 2005. Amphibians and reptiles of La Selva, Costa Rica and the Caribbean slope. A comprehensive guide. Berkeley: University of California Press.

Lee, J. C. 2000. A field guide to the amphibians and reptiles of the Maya world. The lowlands of Mexico, northern Guatemala, and Belize. Ithaca, New York: Comstock Publishing Associates, Cornell University Press.

Myers, C. W. 1982. Blunt-headed vine snakes (*Imantodes*) in Panama, including a new species and other revisionary notes. American Museum Novitates No. 2738:1-50.

Presnell, J. K., and M. P. Schreibman. 1997. Humason's animal tissue techniques, 5th Ed. Baltimore: The John Hopkins University Press.

Savage, J. M. 2002. The amphibians and reptiles of Costa Rica. A herpetofauna between two continents, between two seas. Chicago: University of Chicago Press.

Solórzano, A. 2004. Snakes of Costa Rica: Distribution, taxonomy, and natural history. Santo Domingo de Heredia, Costa Rica: Instituto Nacional de Biodiversidad, InBio.

Zug, G. R., S. B. Hedges and S. Sunkel. 1979. Variation in reproductive parameters of three neotropical snakes, *Coniophanes fissidens*, *Dipsas catesbyi*, and *Imantodes cenchoa*. Smithsonian Contributions to Zoology 300:1-19

*Bull. Chicago Herp. Soc. 44(5):78-79, 2009*

# What You and I Missed at the April Meeting

**John Archer**
**j-archer@sbcglobal.net**

There I was lying on my sick-bed suffering inestimable anguish from food poisoning. I suppose that I should have known not to order the fish sandwich at a BBQ place, but I was having the lesson impressed upon me in ways that only those of you who have also lived through the torment of gastronomic agonies caused by nearly deadly comestibles can fully appreciate. I was fairly certain that I would survive, but at my age, who knew? Luckily I had taken an opportunity to visit southern Illinois in search of elusive creatures that are unwilling to extend their ranges farther north. That meant that I was cloistered in the Lincoln Inn and Resort, that highly reputable establishment whose motto is, "If we don't provide it, you'll find you can live without it." I was in a suite, meaning that I had both a toilet and a shower, cups were provided if you'd thought to bring one, and each day your room was sprayed with eau de mildew. But it's certainly worth at least half of what we pay for a room. Hey. We're herpers. We don' need no fluffy towels.

Dave Barker with prospective CHS member Diego Velarde. Photograph courtesy of Diego Velarde.

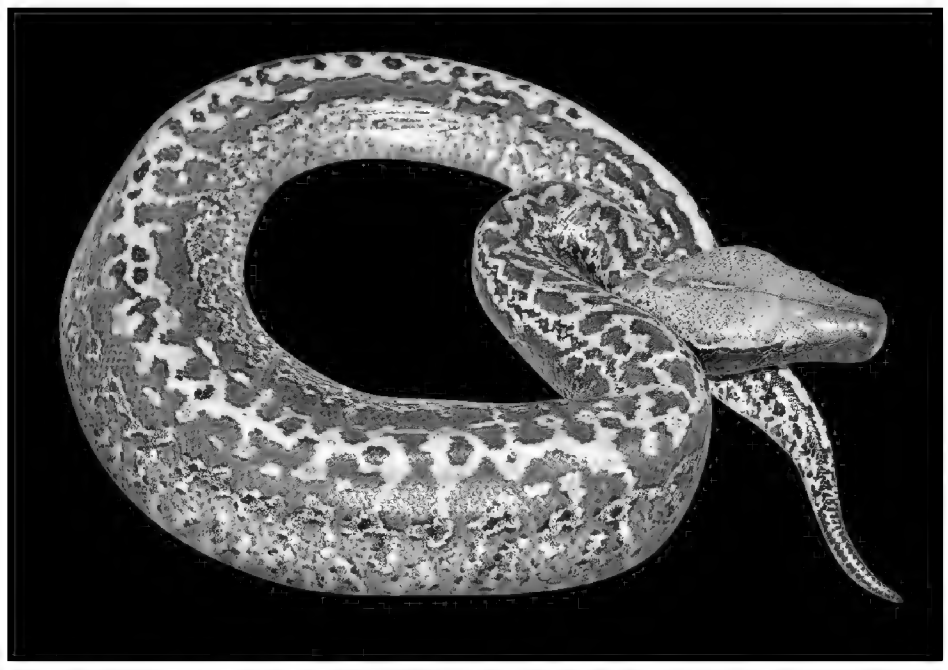
We had arrived Friday and met the group at the restaurant, which, to protect the guilty, I shall call the 45th Street Bar and Grill. Friday night was hellish, and I lay in bed all day Saturday while the rest of the group frolicked across the hills and dales of south Illinois finding all types of creatures that I wished I could observe, but they did return before dinner to check and see if my carcass had to be removed so my daughter could use the room comfortably. Wait, this was the Lincoln, so I'm not sure comfortably was possible. It was probably because they didn't want my decaying body smelling up the room . . . no, that's not possible at the Lincoln either. Anyway, they checked, found me alive, and as my solicitous daughter leaned close, I croaked out a plea for warm soup upon their return. I was on the road to recovery! Which is when she dropped a CD on the nightstand and said, "Here, this is from Mike Dloogatch. It's Barker's presentation."

Pythons were the herp of the month. Photograph by Diego Velarde.

Now I think that I appreciate the work that Mike does for the CHS as much as anyone, and I know that his efforts go a long way in making the CHS what it is, but it's simply cold-blooded (can I use that term in an herp article?) to hand someone a work assignment on his sick bed! How would he have felt if I had suddenly taken a turn for the worse and died with my last thought being "I've got to write that article"? He would have felt terrible. He would have hoped that I had hung on until after I had written the article!

Which is the not-so-short version of how the title this month is a little different than usual. I wasn't at the April meeting because the lousy company that employs me actually expects me to do some work on occasion. I wanted to be, because our speaker was Dave Barker. If you don't know that name it's because you have been very content just enjoying your little leopard gecko and reading my articles, or you're pretty new to the herp world. Dave and Tracy Barker have done everything there is do relative to the animals we're involved with, or at least it seems so. They've done the zoo bit, become academics, and now are business people still doing research while raising and selling pythons. I have seen Dave speak and have had the privilege of being on the receiving end of their hospitality, so I think I can actually write a fairly accurate description of Dave's talk using his PowerPoint presentations and my impressions.

Of course, some of it may be a little off, but I don't think that Dave will be suing me for libel. I happened to see some pictures of the meeting, and the first surprise was a beard. Dave moves through life trailing a long grey ponytail, and I've never seen him dressed up, but I could have described him easily if he hadn't grown that beard. Makes him look distinguished, but then I opened up the PowerPoint files and the first was blood pythons. To quote the slides: "Good evening. This is a review of some of the color and patterns of blood pythons in the VPI collection. Please have your sunglasses ready. Hold on to your seat." That's the Dave Barker I expected. He's a wild and carousing speaker who apparently looks at life as though it's a large joke and wants you to be in on the punch line. This deadly serious academic performs a startling transformation when he speaks and becomes a master of the comedic. I then paged through dozens of fantastic photographs of the many varieties of blood pythons that Dave and Tracy have and are working with. Good for me, but not too good for you, because there is no way that my feeble attempts at writing are up to the task of describing the fantastic assortment of colors and patterns. It would



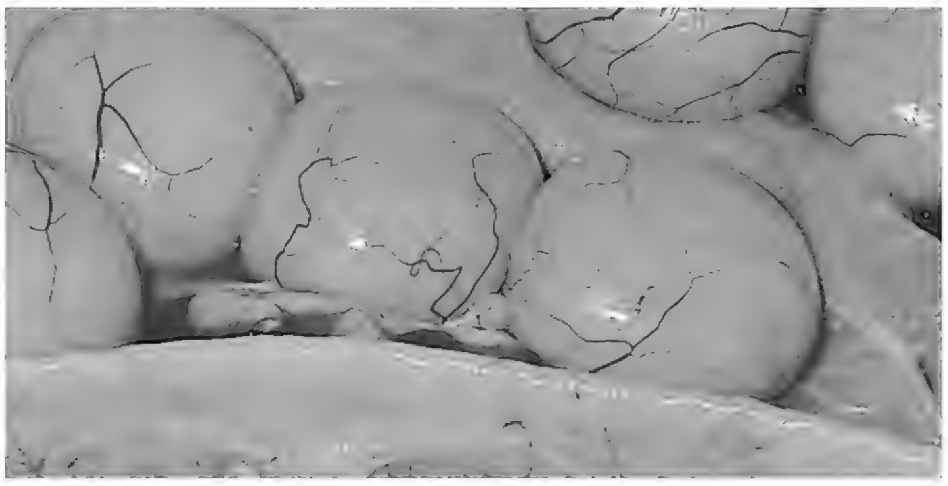
Not your run-of-the-mill blood python.

have made me start liking short fat snakes if Rich Crowley had not already pushed me a little in that direction. And you lose again because I can't relate what I'm certain was the witty narrative that accompanied the photos. I can't believe that Dave didn't deliver those photos without amusement on several levels.

Which brings me to the second PowerPoint presentation. That's right, he apparently gave more than one presentation. The second file had the mundane title of "GeneralRegiusRepro.ppt" so I innocently opened it expecting nothing in particular. The first slide read: "The Mechanics of Ball Python Reproduction. By Dave and Tracy Barker. VPI." Now to someone who has never witnessed a Barker presentation that would seem a reasonably scientific presentation meant to inform you about reproducing ball pythons, which is exactly what it is. But I know what Dave is capable of and I know that every fact was double checked, every photo could grace the pages of a textbook, and that few times would anybody be able to stop laughing. Dave is the college professor that we all wanted. If fifth grade history teachers were like Dave we'd all love history.

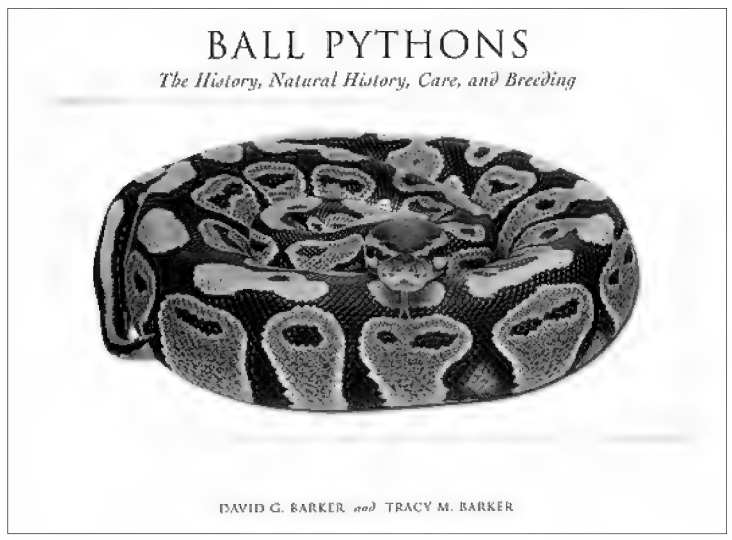
How do I know? Captions for a photomicrograph of ball python sperm: " Most people have never seen ball python sperm. It just never occurred to them." Captions under a picture of a male python's hemipenis with two small appendages on the tip that look like the eyestalks of a snail: "Note those little 'feelers,' the terminal awns. Weird little things. Nobody has any idea what they do. Sometimes I think I'd like to have terminal awns. . . . " The presentation whips through male reproduction.

Two normal ball python sperm.



Large, nearly mature ball python follicles.

Hemipenes. Produce sperm all year. Highly motile sperm. Can breed anytime. Then it moves to the females and things get complicated. No surprise. Females are usually unattractive to males until they move into an active reproductive cycle, which may happen anytime. Dave doesn't know what triggers it. They go through multiple stages of the reproductive cycle usually associated with four sheds. Follicles grow, move around, get fertilized, gain shells, and are eventually laid, but what complications my short summary hides! Such as the females have to actively engage in moving the follicles by using the "lump," a maneuver involving the compression of posterior muscles that forces the ova up the ostia. And that ends my attempts at technical explanations. If you want to know more, go to www.VPI.com and purchase *Ball Pythons: The History, Natural History, Care, and Breeding* by David G. Barker and Tracy M. Barker. Even if you don't own ball pythons, you want this book. Check out the article in last month's *Bulletin* about the book [Critical thinking about ball pythons. The pythonophilia of the Barkers. Bull. Chicago Herp Soc. 44(4):53-55] and Steve Barten's earlier review [Bull. Chicago Herp. Soc. 41(9):165-167]. Buy it. Now.

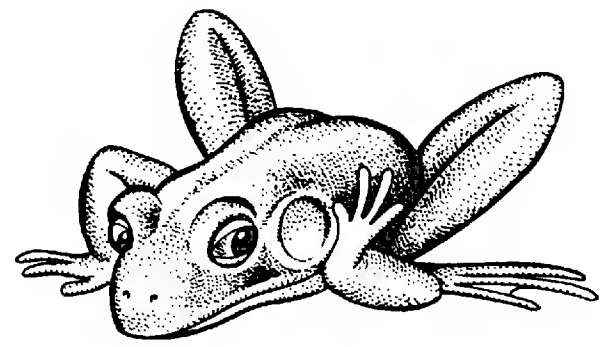



A third presentation began as Dave launched into an impassioned attack on H.R. 669, the house bill that recently failed to emerge from subcommittee but is still being promoted by its sponsor, and is likely to once again threaten our hobby as we know it. I've read some of his thoughts (see "On Burmese Pythons in the Everglades" at www.VPI.com), and Dave comes up with some angles I haven't seen others put forward. Everyone should be informed on this bill, and for several reasons the CHS is officially against its passage. Reading Dave and Tracy's paper is an excellent way to become further informed.

So now you and I know a little of what you and I missed at the last meeting. Just a little. I know Dave. We missed a lot. Awn envy.

# The Tympanum

**Roger Conant Centennial**



Roger Conant (born May 6, 1909) had significant Ohio connections: he started his career at the Toledo Zoo and his book *Reptiles of Ohio* remains a classic. He was also a frequent contributor to the CHS *Bulletin* until his death on December 19, 2003.

Archie Carr was born six weeks later on June 16, 1909. Inspired by the National Wildlife Refuge in Florida named after Carr, in 2000, I led a letter writing campaign to convince the Ohio Department of Natural Resources, Division of Natural Areas & Preserves, to name a property in Ashtabula County for Dr. Conant. Although he was already very "well-awarded," he told me that a naming would be the most significant honor of his life. Unfortunately, it did not happen, but ODNR did induct him into its Hall of Fame in 2001.

Carolyn Caldwell of ODNR's Division of Wildlife quietly took the baton on my idea. It's my privilege to announce, that thanks to her efforts, in 2006, her division named another nearby Ashtabula County parcel the Conant Wildlife Area.

To celebrate the occasion, friend and fellow CHS member Dave Fogel and I visited the property on RC's 100th. Much to our surprise, ODNR has installed an attractive sign.

I hope that Roger Conant has been smiling from the heavens above as much as I have here on Earth! **Raymond Novotny, Ford Nature Center, Mill Creek MetroParks, Youngstown, Ohio. raynovotny@yahoo.com**

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# Herpetology 2009

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

## NATURAL HISTORY OF A VINE SNAKE

R. R. Scartozzoni et al. [2009, South American J. Herpetology 4(1):81-89] inferred aspects of natural history of the vine snake *Oxybelis fulgidus* from the northern region of Brazil based on the analysis of 106 preserved specimens (55 males and 51 females), and from a review of records in the published literature. Males mature at smaller size than females. Differences in body length and shape were also found among adult females and males: adult females are larger in mean snout–vent length and have relatively larger heads and shorter tails. Females have an extended seasonal vitellogenic cycle from April to December (mainly throughout the dry season). Oviductal eggs and egg-laying were recorded from September to December, while births occurred from January to April. Fecundity varied from four to twelve eggs or vitellogenic follicles (n = 13), and was positively correlated with female body length. Testicle volume is significantly larger from February to July (mainly in April and May; end of the rainy season), however the deferent ducts diameter do not differ significantly throughout the year. The authors hypothesized that both males and females may have an associated reproductive pattern, both synchronized in the end of the rainy season. *Oxybelis fulgidus* feeds on lizards (mainly iguanian) and passerine birds. Apparently, females feed more frequently on birds than males.

## DESERT TORTOISE NUTRITION

L. C. Hazard et al. [2009, J. Herpetology 43(1):38-48] note that wild desert tortoises, *Gopherus agassizii*, are eating different foods now than they were decades ago, because exotic plant species have invaded and flourished in the Mojave Desert over the last century. Reservations about the nutritional quality of exotic vegetation compared to native vegetation led the authors to conduct feeding experiments with growing, juvenile desert tortoises. They determined the digestibility of dry matter, energy, fiber, and nitrogen in four foods: *Achnatherum hymenoides* (a native grass), *Schismus barbatus* (an exotic grass), *Malacothrix glabrata* (a native forb), and *Erodium cicutarium* (an exotic forb). The largest nutritional differences among diets were between food types (fresh forbs and dry grasses) rather than between native and exotic species. The two grass diets were higher in fiber content and contained less digestible energy than the two forb diets. The grasses contained little protein, and tortoises actually lost mass and body nitrogen while eating them. The exotic forb yielded more energy and nitrogen per unit dry mass than did the native forb, but this may be related to differences in phenological stages and associated fiber contents of these foods when they were collected. Juvenile tortoises gained weight rapidly when eating forbs and showed no evidence of having a lower digestive capability than did adults, despite their small size and immaturity. Estimates of nitrogen requirements compared to annual nitrogen intake on these diets suggested that growth of juveniles may be limited in part by dietary nitrogen.

## CHAMELEON SLEEPING BEHAVIOR

B. Razafimahatratra et al. [2008, Current Herpetology 27(2):93-99] investigated sleeping site selection of *Brookesia decaryi* in a dry forest of northwestern Madagascar from mid-October 2004 to the beginning of May 2005. Sleeping site characteristics were recorded for 304 individuals. This chameleon species is diurnal, dwelling on the ground in the daytime, but at night all individuals were found perching on small plants, shrubs, dead fallen branches, or liana. Eighty percent of adult males, 73% of adult females, 85% of juveniles, and 82% of hatchlings slept on small plants. Approximately 70% of individuals chose a sprig or branch as a support during the sleeping time; the others selected a leaf or trunk. Preferred sleeping orientation was horizontal or oblique with head up. No tendency to sleep at the tip of support was observed. There were no sexual differences in sleeping site selection (perch diameter, perch height, and vegetation height), but there were significant differences in these variables among age classes. Body size was significantly positively correlated with perch diameter and perch height, but not with vegetation height. The primary factor determining sleeping site and position of *B. decaryi* may be predation avoidance, but other factors, like morphological constraint and weather, cannot be excluded.

## PREY AVAILABILITY AND HABITAT SELECTION

J. H. Sperry and P. J. Weatherhead [2009, J. Herpetology 43(1): 55-64] note that an animal's requirements (e.g., food vs. shelter) from its environment are likely to vary seasonally and, therefore, so too should habitat selection. The authors tested the hypothesis that Texas ratsnakes (*Elaphe obsoleta*) choose habitats based on prey availability during their active season and on cover during winter. They examined snake habitat selection at three spatial scales and compared that to abundance of small mammals and nesting birds, which were confirmed by diet analysis to be the snakes' principal prey. Small mammal trapping and avian point counts showed that overall prey abundance was higher on mesas and slopes compared to savannahs. Compared to availability of habitats within the entire study area, snakes selected home ranges with a high proportion of slope habitat. Within home ranges, however, selection for slopes was exhibited only during winter when foraging is at a minimum and snakes are relatively inactive. Snakes did not use habitat within home ranges selectively during the active season or during the avian breeding season. The latter result suggests that ratsnakes are effective avian nest predators despite preying on birds opportunistically. However, it is also possible that some individual ratsnakes specialize on birds, whereas the majority preys on mammals. Microhabitat analysis comparing winter and active season sites showed that snakes preferentially used areas of high canopy cover and rock ground cover during winter. Collectively these results provide limited support for the hypothesis that ratsnakes use habitats based on prey availability but do indicate that ratsnakes select winter habitat based on cover availability.

## REPRODUCTIVE ECOLOGY OF NORTHERN SNAKES

P. T. Gregory [2009, Herpetologica 65(1):1-13] notes that each year, as the warmth of summer turns into the cool of autumn and the cold of winter, snakes disappear from the Canadian landscape. For several months of the year, winter weather at high latitudes is much too cold for snakes to be active in the open and they must seek subterranean shelter to hibernate. This long period underground is one during which these animals are subject not only to the possibility of mortality, but also to lost opportunity for activities such as foraging and the acquisition of resources for reproduction. Winter is thus a major constraint on the life histories of temperate-zone snakes. Short, cool summers further restrict their foraging and reproductive opportunities. In apparent response to this challenge, most high-latitude snake species are viviparous, counter to what is seen in warmer climes. Viviparity allows gravid females to "manipulate" the developmental temperature of their progeny, via behavioral thermoregulation, until those offspring are independent, an option not open to oviparous species. However, viviparity also has costs, not least of which is a pronounced reduction in feeding during pregnancy, which means that the post-partum female has only a short time before winter to make up the reserves ("capital") that she spent on reproduction and will need for future reproduction; therefore, reproduction in consecutive years is not always possible. Evidently, the demographic costs of viviparity are outweighed by its advantages, but what remains unexplained is how some oviparous species manage to persist at high latitudes. Demographic advantages of oviparous over viviparous species, due to shorter "pregnancy" of the former, are not apparent from limited temperate-zone studies. More likely, cool-climate oviparous species also reproduce successfully by taking advantage of the thermal heterogeneity of the environment, especially by thermoregulating precisely while gravid and/or by careful selection of nest sites.

## REPTILIAN PREDATION ON MALLARD DUCKLINGS

K. P. Kenow et al. [2009, J. Herpetology 43(1):154-158] note that information on the predation rate of eastern snapping turtles (*Chelydra s. serpentina*) and western fox snakes (*Pantherophis vulpinus*) on waterfowl, particularly ducklings, is minimal. Most information that exists focuses on the percent of waterfowl found in the diet of sampled turtles or snakes. Although this information is useful, it does not elucidate the potential effect of reptile predation on waterfowl populations by measuring predation rate (i.e., the number of sampled ducklings consumed by reptile predators). The authors attempted to determine this by tracking the fate of 448 day-old mallard (*Anas platyrhychos*) ducklings from 1991 through1994 on the upper Mississippi River. A total of 120 ducklings were preyed upon during the study (26.7% predation rate). Of these, 13 were consumed by eastern snapping turtles (2.9% predation rate) and four by western fox snakes (0.8% predation rate). Predation rate by reptiles was lower than mammals and similar to that of fish and birds, but several depredations with undetermined sources could have been caused by eastern snapping turtles. For a proper perspective on predation impacts on duckling populations, one must also consider the influence of habitat quality as it relates to the interactions of predation, food resources and cover.

## SOCIAL BEHAVIOR OF TWO CHAMELEON SPECIES

K. B. Karsten et al. [2009, Herpetologica 65(1):54-69] note that signaling plays a critical role in social behavior, particularly in polygynous systems where males compete with rival males and use signals to attract mates. The authors quantified visual signals and social behavior in two previously unstudied species of chameleons in Madagascar, *Furcifer labordi* and *F. verrucosus*. Females of both species displayed distinct color patterns that signaled either nonreceptivity or potential sexual receptivity. Nonreceptive females rejected all male courtship. Potentially receptive *F. verrucosus* females mainly allowed males to attempt copulation, whereas potentially receptive *F. labordi* females were selective. The authors found that the fleshy, paddle-like rostral appendage in *F. labordi* was used only during courtship, whereas other studies showed that hard, keratinized appendages were used for male combat. During male-male contests, *F. labordi* had much more physically intense encounters, possibly to assess opponent quality more accurately since adult male *F. labordi* were significantly more size-matched than adult male *F. verrucosus*. This study elucidated the role of social signals in these species, illustrated the atypical social behavior of chameleons compared to other lizards, and provided testable hypotheses to further delineate sexual selection in this understudied group. Sexual selection, especially intersexual selection, appears more likely in *F. labordi* than in *F. verrucosus*.

## EFFECTS OF EXPERIMENTALLY INDUCED CONSPICUOUS COLORATION

T. A. Baird [2009, Herpetologica 65(1):31-38] used paint to manipulate the coloration of first-year collared lizard males in the field to test whether conspicuous coloration increases risk of predation and/or aggression from dominant same-sex conspecifics, or resulted in decreased activity as a consequence of either or both increased attention from predators or socially dominant conspecifics. First-year collared lizard males are a good system for this study because their coloration is less developed than that of older males, they may suffer significant predation pressure, and instead of defending territories, they use stealthy tactics to avoid aggression from older socially-dominant males. To test these potential costs, the author enhanced the coloration of first-year males in a conspicuous group by painting them similar to older territorial males, used brown paint similar to that of conspecific females to alter coloration in an inconspicuous group, and painted a control group with water. He then recorded census and focal observation data on these males for 40 d to examine survivorship, receipt of aggression by dominant males, and two indices of their activity; the number of censuses when first-year males were emergent, and their rates of travel. Both rates of predation and the frequency of aggressive acts received from territorial males were low overall and did not differ among the three treatment groups. Moreover, males in the three treatment groups did not differ in either the number of censuses when they were sighted or their rates of travel. These results are not consistent with the hypothesis that conspicuous coloration increases risk of predator attack or aggression from dominant conspecific males, suggesting that other costs may explain the observation that conspicuous coloration develops gradually in first-year collared lizard males.

# Unofficial Minutes of the CHS Board Meeting, April 17, 2009

The meeting was called to order at 7:43 P.M. at the Schaumburg Public Library. Board members Aaron LaForge and Brad Trost were absent.

**Officers' Reports**

Recording Secretary: Cindy Rampacek read the minutes of the March 13 board meeting to the board. Minor corrections were made, and the minutes were accepted.

Treasurer: Andy Malawy presented the ReptileFest register receipts for the board to view. Total attendance was estimated at 4935. He also presented the financial reports and no questions were raised. The CHS PayPal account is active.

Membership Secretary: Mike Dloogatch reported that we received around 11 new members from 'Fest.

Vice-president: Jason Hood reported that Paul Sereno will be speaking is August. Jerimiah Easter from Diamondback Trading Cards will be sending us sets of the cards to hand out.

Sergeant-at-arms: Dan Bavirsha counted 56 people at the March general meeting.

**Committee Reports**

Shows:
- River Trails Nature Center Earth Day event, April 18, 1–4 P.M.
- Notebaert, Park Voyagers Family Fun Day, April 25. We have a large area in which to display.
- Emily Oaks Nature Center in Skokie is looking for a snapping turtle and either a garter or a brown snake or a blue-spotted salamander for Earth Day, April 26.

Central Stickney Park District has invited us for their 11th annual family fest on August 16 from Noon until 11 P.M.

Adoptions: Linda noted that Darrell Senneke has been working with a pond company for placement of sliders.

**Old Business**

Symposium 2009: Working on securing speakers. Our website is active.

Notebaert cooperation: John received an email from the new exhibit director who wants to continue their relationship with us.

NE Herp Society legislative action: Jason has not received a response. We need to clarify their position. The CHS will however release a general position statement on HR 669.

Letters to Governor and new IDNR director: The society wrote to welcome both newcomers. The CHS received a thank-you letter back from Governor Quinn.

**New Business**

A new CHS member is a counselor for people with compulsive disorders. He would like to partner with the CHS to work people with phobias.

ReptileFest 2010: April 10 and 11. It is the week after Easter.

Oprah: Deb Krohn, Rick Hoppenrath and Dan Nathan represented the CHS on an episode of the Oprah show dealing with rescue animals. It will air sometime in May.

Comcast show: We have been invited to appear on a local cable show, "Community Connection," in either May or June. Deb, Rick and Josh are all willing.

Josh was on the "Taped with Rabbi Doug" show to promote the CHS. John assisted Josh with the animals, but was not on camera. Rabbi Doug has invited us back in January to help promote ReptileFest 2010.

Jason hopes to organize a CHS spring picnic at the Lake Forest Discovery Center on a Sunday in May. He will publicize it on the forum.

**Round Table**

The CHS received a copy of the latest publication of CNAH on common and scientific names of North American herps. These can be obtained free of charge from CNAH if you send them a stamped, self-addressed 7 × 10 envelope.

Jason Hood has heard from Mike Dreslik that he is finding record numbers of massasaugas at his downstate study site this spring.

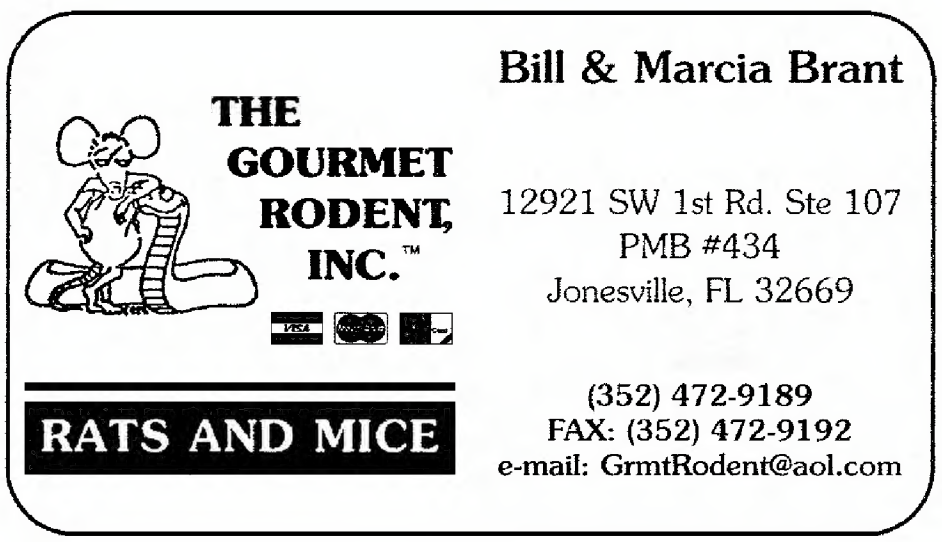
Jason Hood and Dan Bavirsha thanked everyone for all the help at 'Fest, especially those who stayed to help out with the clean up and teardown.

John Driscoll mentioned that he didn't see a lot of people sneaking in, but Jenny Vollman said that there were several gate-crashers caught.

René Rivera was very happy and impressed with ReptileFest and he hopes to exhibit next year.

The meeting adjourned at 9:29 P.M.

*Respectfully submitted by recording secretary Cindy Rampacek*

# Advertisements

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail: GrmtRodent@aol.com.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice and rats. Our mice and rats are vacuum-packed to greatly extend freezer life by reducing freezer burning and preserving vitamin and nutrient content. We feed our colony a nutrtionally balanced diet of rodent chow, formulated especially for us, and four types of natural whole grains and seeds. For a complete price list please visit our web site, www.themousefactory.com. We accept all major credit cards, PayPal or money orders. Call us **toll-free** (800) 720-0076 or send us an e-mail at info@themousefactory.com. Write us at PO Box 85, Alpine TX 79831.

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice availabe: small newborn pinks up to jumbo adults. Prices start at $25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: Rats—live or frozen. I breed rats for my collection of boas so only top quality lab chow and care will do, I'm now offering surplus animals for sale. Located in far south suburbs of Chicago. Only orders of 20 or more please, no large rats will be available. For current availability and prices, please e-mail Steve at smuys@sbcglobal.net.

For sale: Now taking reservations for '09 unusual garters. Please note that the ? indicates that the price will be determined at birth. Here's what is expected to be produced in June. **Easterns**: normals, $25 each/2 for $40, flames × Schuett albinos, $200–250, flame albinos, $500–600 (limited numbers), 100% het flame albinos (flames), $250–300, 100% het flame albinos (normal looking), $125, 66% poss het flame albinos (flames), $150–200, 66% poss het flame albinos (normal), $85, flames $100–150, paradox albino Florida × Florida erythristic $150–200, paradox albino Florida × flame $200–250, **leucistic/ leucistic flames**, $450–500, 100% het leucistic flames, $200–250, 100% het leucistics (normal looking), $125, silver × Schuett albino, $245, silver × erythristic (erythristic 100% het silvers), $150, silver × West Virginia anerythristic eastern, $200, silver, $295, 100% het silvers (outcrossed), $95, Carteret Cty × Schuett albinos × Carteret Cty × Schuett albinos (very limited numbers), ?, Myrtle Beach × Schuett albino × Myrtle Beach × Schuett albino, ?, anerythristic eastern - Mohr strain, $350, flame 100% het anerythristic eastern - Mohr strain, $195,100% het anerythristic easterns - Mohr strain, $150, melanistic eastern, $35, Schuett albinos (numerous bloodlines), $195–225, snow Schuett strain, $195. **Plains**: normals $25 each/2 for $40, axanthic × axanthic (Possible super axanthic), ?, axanthic × snow (double het for blizzard), $95, axanthic, $45, Nebraska albino × high red plains, $125, Nebraska albino, $75, double het Nebraska snow (Nebraska albino × anerythristic), $60, Nebraska albino × hypo, $145, red plains, $40, Iowa snow, $75, red plains × double het Iowa albino × Nebraska albino, $50, Iowa albino, $75, anerythristic plains, $45, Snowbino × quad het (expect albinos, anerythristics, snows and possible hets on these), hybino, $195, 100% het hybino, $75. **Central American**: *fulvus*, $45, *melanogaster*, $175 (limited number expected—first time available in the US), *cuitzeoensis*, $250 (very limited number expected—first time available in the US). **Red-sided**: normals, $25 each/2 for $40, blue red-sided × Kansas albino, $175, blue red-sided × anerythristic, $150, blue red-sided × normal, $95, golden red-sided × Kansas albino, $100, Iowa albino red-sided × anerythristic (double het snow), $275 pair, albino Kansas strain, $300, anerythristic, $75. **California red-sideds (new neon blue normal blood-line)**: hypo, $350, 100% het hypo, $175, outcrossed unrelated normals, $125. **Wandering**: melanistics (outcrossed), $95, Het melanistic (outcrossed), $45. ***Similis* (Florida blue-striped)**, $40. **Checkered**: granite checkereds, $100 (new recessive morph), 66% poss het (snow/granite) checkereds, $35. Scott, 919-413-8321; email: SFelzer1@nc.rr.com , website: www.albinogartersnake.com.

For sale: Trophy quality jungle carpet, diamond-jungle, and jaguar carpet pythons. Website: moreliapython.googlepages.com E-mail: junglejohn@tds.net

Herp tours: Adventure trips to **Madagascar**! Journey somewhere truly unique to seek and photograph nature on the world's least-studied mini-continent. For maximum herp fun and discovery, join Bill Love as we go where few people will ever venture in their lives. Let his experience assure a comfortable tour finding the most colorful and bizarre species on the planet! Get all the details at Blue Chameleon Ventures' comprehensive new website: <http://www.bluechameleon.org>, E-mail: bill@bluechameleon.org, or call (239) 728-2390.

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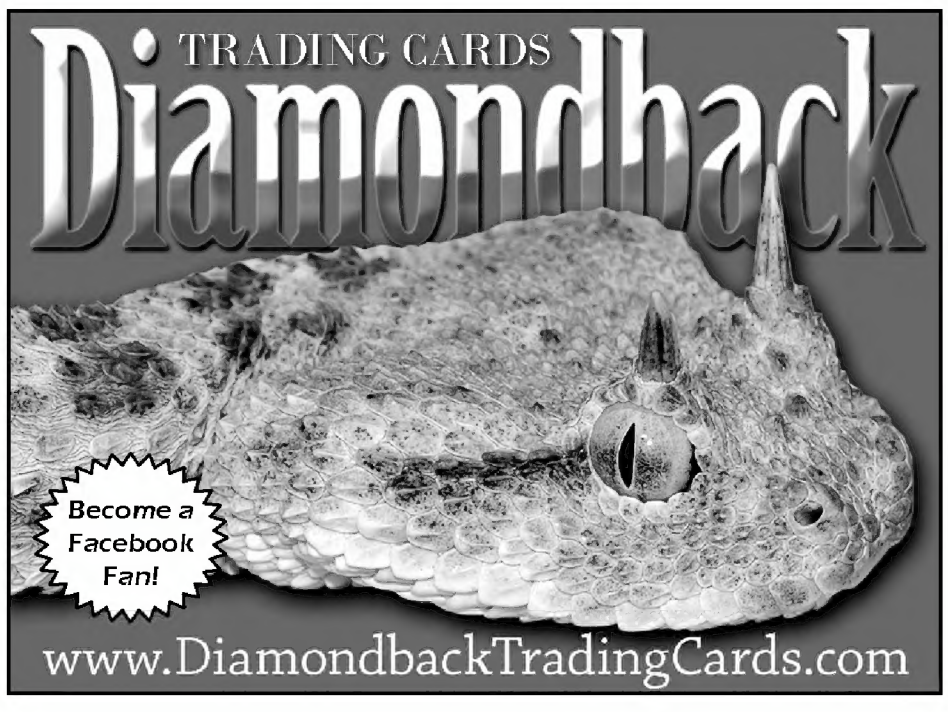
Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail: MADadder0@aol.com



## UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, May 27, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. **Dr. Bryan Grieg Fry** will speak about the evolution of snake venom and about some of his experiences looking for venomous snakes all over the world. Dr. Fry leads his own venom research group within the Department of Biochemistry and Molecular Biology at the University of Melbourne [Australia]. According to his web site, www.venomdoc.com, he considers himself incredibly lucky to have a career as a "venom researcher/global snake botherer."

The June 24 meeting will be our popular and always well-attended annual **Show & Tell** meeting. Bring an animal that you find interesting for one reason or another and be prepared to give a short (under five minutes) presentation to the group. Don't be shy. Neither age (yours) nor commonness (the animal's) should be a limitation.

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum—the **Peggy Notebaert Nature Museum**. This beautiful building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

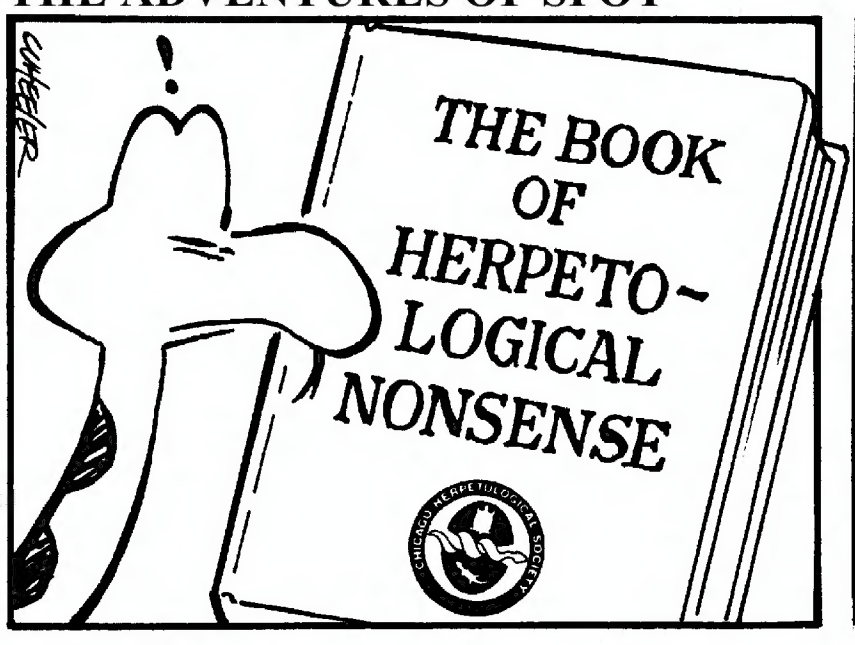
### Board of Directors Meeting

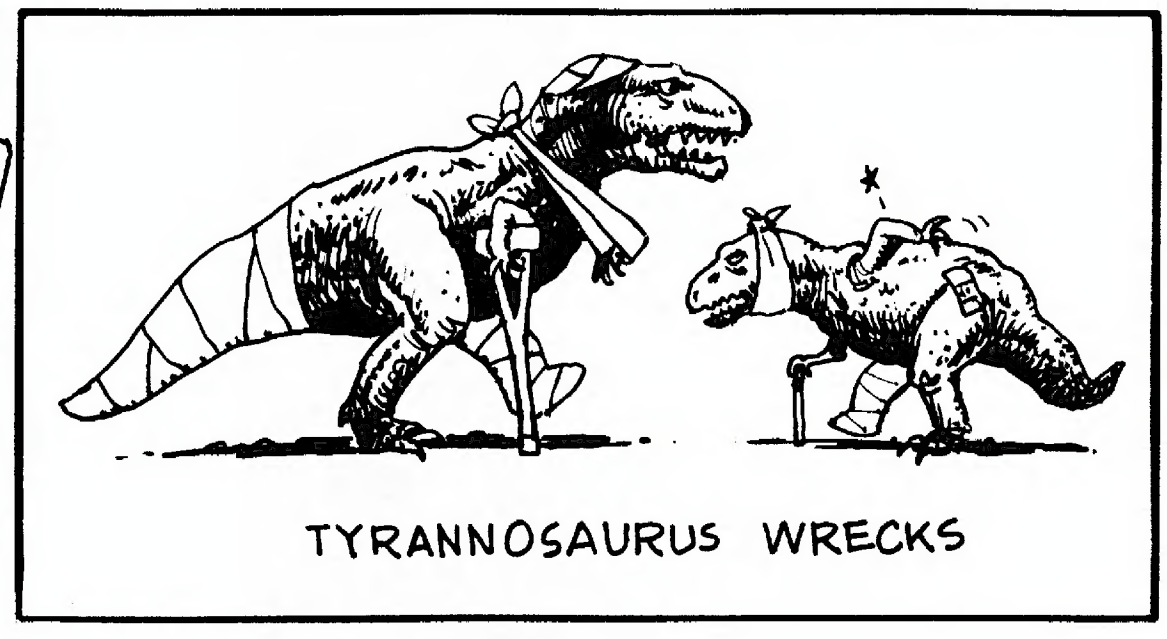
Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the next board meeting, to be held at 7:30 P.M., June 12, in the adult meeting room on the second floor of the Schaumburg Township District Library, 130 S. Roselle Road, Schaumburg.

### The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info visit the CTC website: http://www.geocities.com/~chicagoturtle.

## THE ADVENTURES OF SPOT



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